

45. (New) The use as claimed in claim 44, in which the lowering of the surface tension or of the interface tension of water is of at least 15 mN/m for a concentration of polymer in water of 0.1% by mass in the temperature range from 5 to 80°C.

46. (New) The use as claimed in claim 44, in which the lowering of the surface tension or of the interface tension of water is of at least 20 mN/m for a concentration of polymer in water of 0.1% by mass when the temperature is higher than the demixing temperature of the units with an LCST at this concentration.

47. (New) The use of a polymer comprising water-soluble units and units with an LCST, the units with an LCST having in water a demixing temperature of from 5 to 40°C at a concentration of 1% by mass in water, to manufacture a foam.

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48. (New) The use of a polymer comprising water-soluble units and units with an LCST, the units with an LCST having in water a demixing temperature of from 5 to 40°C at a concentration of 1% by mass in water, to manufacture a foam, also comprising a foaming surfactant at a concentration of less than or equal to 5% by mass.

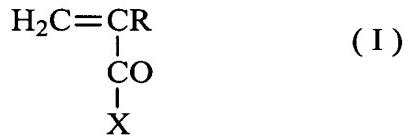
49. (New) The use of a polymer comprising water-soluble units and units with an LCST, the units with an LCST having in water a demixing temperature of from 5 to 40°C at a concentration of 1% by mass in water, to manufacture an emulsion free of additional emulsifying surfactant or containing an additional emulsifying surfactant at a concentration of less than or equal to 1% by mass.

50. (New) A foaming composition comprising an aqueous phase containing a polymer comprising water-soluble units and units with an LCST, the units with an LCST having in water a demixing temperature of from 5 to 40°C at a concentration of 1% by mass in water.

51. (New) A foaming composition as claimed in claim 50, in which the polymer is in the form of a block polymer comprising water-soluble units alternating with units with an LCST, or in the form of a grafted polymer whose backbone is formed from water-soluble units and which bears grafts consisting of units with an LCST, this structure possibly being partially crosslinked, or alternatively in the form of a grafted polymer whose backbone is formed from units with an LCST and which bears grafts consisting of water-soluble units, this structure possibly being partially crosslinked.

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52. (New) A foaming composition as claimed in claim 50, in which the water-soluble units are obtained by free-radical polymerization of at least one monomer chosen from:

- (meth)acrylic acid;
- vinyl monomers of formula (I) below:



in which:

- R is chosen from H, -CH<sub>3</sub>, -C<sub>2</sub>H<sub>5</sub> or -C<sub>3</sub>H<sub>7</sub>, and
- X is chosen from:
  - alkyl oxides of -OR' type in which R' is a linear or branched, saturated or unsaturated hydrocarbon radical containing from 1 to 6 carbon atoms, optionally substituted with at least one halogen atom (iodine, bromine, chlorine or fluorine); a sulphonic (-SO<sub>3</sub><sup>-</sup>), sulphate (-SO<sub>4</sub><sup>-</sup>), phosphate (-

$\text{PO}_4\text{H}_2$ ); hydroxyl (-OH); primary amine ( $-\text{NH}_2$ ); secondary amine ( $-\text{NHR}_1$ ), tertiary amine ( $-\text{NR}_1\text{R}_2$ ) or quaternary amine ( $-\text{N}^+\text{R}_1\text{R}_2\text{R}_3$ ) group with  $\text{R}_1$ ,  $\text{R}_2$  and  $\text{R}_3$  being, independently of each other, a linear or branched, saturated or unsaturated hydrocarbon radical containing 1 to 6 carbon atoms, with the proviso that the sum of the carbon atoms of  $\text{R}' + \text{R}_1 + \text{R}_2 + \text{R}_3$  does not exceed 7; and

-  $-\text{NH}_2$ ,  $-\text{NHR}_4$  and  $-\text{NR}_4\text{R}_5$  groups in which  $\text{R}_4$  and  $\text{R}_5$  are, independently of each other, linear or branched, saturated or unsaturated hydrocarbon radicals containing 1 to 6 carbon atoms, with the proviso that the total number of carbon atoms in  $\text{R}_4 + \text{R}_5$  does not exceed 7, the said  $\text{R}_4$  and  $\text{R}_5$  optionally being substituted with a halogen atom (iodine, bromine, chlorine or fluorine); a hydroxyl (-OH); sulphonic ( $-\text{SO}_3^-$ ), sulphate ( $-\text{SO}_4^-$ ); phosphate ( $-\text{PO}_4\text{H}_2$ ); primary amine ( $\text{NH}_2$ ); secondary amine ( $-\text{NHR}_1$ ), tertiary amine ( $-\text{NR}_1\text{R}_2$ ) and/or quaternary amine ( $-\text{N}^+\text{R}_1\text{R}_2\text{R}_3$ ) group with  $\text{R}_1$ ,  $\text{R}_2$  and  $\text{R}_3$  being, independently of each other, a linear or branched, saturated or unsaturated hydrocarbon radical containing 1 to 6 carbon atoms, with the proviso that the sum of the carbon atoms of  $\text{R}_4 + \text{R}_5 + \text{R}_1 + \text{R}_2 + \text{R}_3$  does not exceed 7;

- maleic anhydride;
- itaconic acid;
- vinyl alcohol of formula  $\text{CH}_2=\text{CHOH}$ ;
- vinyl acetate of formula  $\text{CH}_2=\text{CH}-\text{OCOCH}_3$ ;
- N-vinyl lactams such as N-vinylpyrrolidone, N-vinylcaprolactam and N-butyrolactam;

- vinyl ethers of formula  $\text{CH}_2=\text{CHOR}$  in which  $\text{R}_6$  is a linear or branched, saturated or unsaturated hydrocarbon radical containing from 1 to 6 carbon atoms;
- water-soluble styrene derivatives, especially styrene sulphonate;
- dimethyldiallylammonium chloride; and
- vinylacetamide.

53. (New) A foaming composition as claimed in claim 50, in which the water-soluble units consist totally or partially of one or more of the following components:

- water-soluble polyurethanes,
- xanthan gum,
- alginates and derivatives thereof such as propylene glycol alginate,
- cellulose derivatives and especially carboxy methylcellulose,

hydroxypropylcellulose, hydroxyethylcellulose and quaternized hydroxy ethylcellulose,

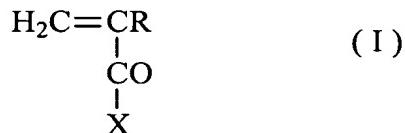
- galactomannans and derivatives thereof such as konjac gum, guar gum,  
hydroxypropylguar, hydroxypropylguar modified with sodium methyl carboxylate groups,  
and hydroxypropyltrimethyl ammonium guar chloride, and

- polyethyleneimine.

54. (New) A foaming composition as claimed in claim 50, in which the water-soluble units have a molar mass ranging from 1000 g/mol to 5 000 000 g/mol when they constitute the water-soluble backbone of a grafted polymer, or a molar mass ranging from 500 g/mol to 100 000 g/mol when they constitute one block of a multiblock polymer or when they constitute the grafts of a grafted polymer.

55. (New) The foaming composition as claimed in claim 50, in which the units with an LCST consist of one or more of the following polymers:

- polyethers such as polyethylene oxide (PEO), polypropylene oxide (PPO) and random copolymers of ethylene oxide (EO) and of propylene oxide (PO),  
 - polyvinyl methyl ethers,  
 - polymeric N-substituted acrylamide derivatives such as poly-N-isopropylacrylamide, poly-N-ethylacrylamide and copolymers of N-isopropyl acrylamide or of N-ethylacrylamide and of a vinyl monomer corresponding to formula (I)



in which:

- R is chosen from H, -CH<sub>3</sub>, -C<sub>2</sub>H<sub>5</sub> or -C<sub>3</sub>H<sub>7</sub>, and
- X is chosen from:
  - alkyl oxides of -OR' type in which R' is a linear or branched, saturated or unsaturated hydrocarbon radical containing from 1 to 6 carbon atoms, optionally substituted with at least one halogen atom (iodine, bromine, chlorine or fluorine); a sulphonic (-SO<sub>3</sub><sup>-</sup>), sulphate (-SO<sub>4</sub><sup>2-</sup>), phosphate (-PO<sub>4</sub>H<sub>2</sub>); hydroxyl (-OH); primary amine (-NH<sub>2</sub>); secondary amine (-NHR<sub>1</sub>), tertiary amine (-NR<sub>1</sub>R<sub>2</sub>) or quaternary amine (-N<sup>+</sup>R<sub>1</sub>R<sub>2</sub>R<sub>3</sub>) group with R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> being, independently of each other, a linear or branched, saturated or unsaturated hydrocarbon radical containing 1 to 6 carbon atoms, with the

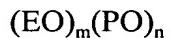
proviso that the sum of the carbon atoms of  $R' + R_1 + R_2 + R_3$  does not exceed 7; and

-  $\text{-NH}_2$ ,  $\text{-NHR}_4$  and  $\text{-NR}_4\text{R}_5$  groups in which  $R_4$  and  $R_5$  are, independently of each other, linear or branched, saturated or unsaturated hydrocarbon radicals containing 1 to 6 carbon atoms, with the proviso that the total number of carbon atoms in  $R_4 + R_5$  does not exceed 7, the said  $R_4$  and  $R_5$  optionally being substituted with a halogen atom (iodine, bromine, chlorine or fluorine); a hydroxyl (-OH); sulphonic ( $\text{-SO}_3^-$ ), sulphate ( $\text{-SO}_4^-$ ); phosphate ( $\text{-PO}_4\text{H}_2$ ); primary amine ( $\text{NH}_2$ ); secondary amine ( $\text{-NHR}_1$ ), tertiary amine ( $\text{-NR}_1\text{R}_2$ ) and/or quaternary amine ( $\text{-N}^+\text{R}_1\text{R}_2\text{R}_3$ ) group with  $R_1$ ,  $R_2$  and  $R_3$  being, independently of each other, a linear or branched, saturated or unsaturated hydrocarbon radical containing 1 to 6 carbon atoms, with the proviso that the sum of the carbon atoms of  $R_4 + R_5 + R_1 + R_2 + R_3$  does not exceed 7;

or of a monomer chosen from maleic anhydride, itaconic acid, vinyl pyrrolidone, styrene and its derivatives, dimethyldiallylammonium chloride, vinylacetamide, vinyl ethers and vinyl acetate derivatives; and

- polyvinylcaprolactam and copolymers of vinylcaprolactam and of a vinyl monomer corresponding to formula (I), or of a monomer chosen from maleic anhydride, itaconic acid, vinylpyrrolidone, styrene and its derivatives, dimethyldiallylammonium chloride, vinylacetamide, vinyl ethers and vinyl acetate derivatives.

56. (New) The foaming composition as claimed in claim 50, in which the units with an LCST consist of polypropylene oxides of formula  $(\text{PPO})_n$  with n being an integer from 10 to 50, or random copolymers of ethylene oxide (EO) and of propylene oxide (PO), represented by the formula:



in which m is an integer ranging from 1 to 40 and preferably from 2 to 20, and n is an integer ranging from 10 to 60 and preferably from 20 to 50.

57. (New) The foaming composition as claimed in claim 56, in which the molar mass of the units with an LCST is from 500 to 5300 g/mol and preferably from 1500 to 4000 g/mol.

58. (New) The foaming composition as claimed in claim 55, in which the units with an LCST consist of poly-N-isopropylamide or poly-N-ethylacrylamide or a copolymer of N-isopropylacrylamide or of N-ethylacrylamide and of a monomer corresponding to formula (I) or of a monomer chosen from maleic anhydride, itaconic acid, vinylpyrrolidone, styrene and its derivatives, dimethyldiallylammmonium chloride, vinylacetamide, vinyl alcohol, vinyl acetate, vinyl ethers and vinyl acetate derivatives.

59. (New) The foaming composition as claimed in claim 58, in which the molar mass of the units with an LCST is from 1000 g/mol to 500 000 g/mol and preferably from 2000 to 50 000 g/mol.

60. (New) The foaming composition as claimed in claim 50, in which the units with an LCST consist of a polyvinylcaprolactam or a copolymer of vinylcaprolactam and of a vinyl monomer corresponding to formula( I)

or of a monomer chosen from maleic anhydride, itaconic acid, vinylpyrrolidone, styrene and its derivatives, dimethyldiallylammmonium chloride, vinylacetamide, vinyl alcohol, vinyl acetate, vinyl ethers and vinyl acetate derivatives.

61. (New) The foaming composition as claimed in claim 60, in which the molar mass of the units with an LCST is from 1000 to 500 000 g/mol and preferably from 2000 to 50 000 g/mol.

62. (New) The foaming composition as claimed in claim 50, in which the proportion by mass of the units with an LCST of the polymer is from 5 to 70%, preferably from 20 to 65% and better still from 30 to 60% relative to the polymer.

63. (New) The foaming composition as claimed in claim 50, in which the demixing temperature of the units with an LCST is from 5 to 40°C for a concentration of the units with an LCST in water of 1% by mass.

64. (New) The foaming composition as claimed in claim 50, in which the concentration by mass of polymer in the aqueous phase is less than or equal to 5% and preferably from 0.01% to 5%.

65. (New) The foaming composition as claimed in claim 50, in which the aqueous phase also comprises a foaming surfactant in a concentration not exceeding 5% by mass.

66. (New) An oil-in-water emulsion comprising an aqueous phase and an oily phase dispersed in the aqueous phase, in which the aqueous phase comprises a polymer comprising water-soluble units and units with an LCST, the units with an LCST having in water a demixing temperature of from 5 to 40°C at a concentration of 1% by mass in water.

67. (New) A water-in-oil-in-water emulsion comprising a water-in-oil emulsion dispersed in an outer aqueous phase, in which the outer aqueous phase comprises a polymer comprising water-soluble units and units with an LCST, the units with an LCST having in water a demixing temperature of from 30 to 40°C at a concentration of 1% by mass in water.

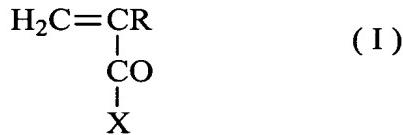
68. (New) The emulsion as claimed in claim 66, in which the polymer is in the form of a block polymer comprising water-soluble units alternating with units with an LCST, or in the form of a grafted polymer whose backbone is formed from water-soluble units and which bears grafts consisting of units with an LCST, this structure possibly being partially crosslinked, or alternatively in the form of a grafted polymer whose backbone is formed from

units with an LCST and which bears grafts consisting of water-soluble units, this structure possibly being partially crosslinked.

69. (New) The emulsion as claimed in claim 66, in which the water-soluble units are obtained by free-radical polymerization of at least one monomer chosen from:

- (meth)acrylic acid;
- vinyl monomers of formula (I) below:

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in which:

- R is chosen from H, -CH<sub>3</sub>, -C<sub>2</sub>H<sub>5</sub> or -C<sub>3</sub>H<sub>7</sub>, and
- X is chosen from:
  - alkyl oxides of -OR' type in which R' is a linear or branched, saturated or unsaturated hydrocarbon radical containing from 1 to 6 carbon atoms, optionally substituted with at least one halogen atom (iodine, bromine, chlorine or fluorine); a sulphonic (-SO<sub>3</sub><sup>-</sup>), sulphate (-SO<sub>4</sub><sup>2-</sup>), phosphate (-PO<sub>4</sub>H<sub>2</sub>); hydroxyl (-OH); primary amine (-NH<sub>2</sub>); secondary amine (-NHR<sub>1</sub>), tertiary amine (-NR<sub>1</sub>R<sub>2</sub>) or quaternary amine (-N<sup>+</sup>R<sub>1</sub>R<sub>2</sub>R<sub>3</sub>) group with R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> being, independently of each other, a linear or branched, saturated or unsaturated hydrocarbon radical containing 1 to 6 carbon atoms, with the proviso that the sum of the carbon atoms of R<sub>4</sub> + R<sub>1</sub> + R<sub>2</sub> + R<sub>3</sub> does not exceed 7; and

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- -NH<sub>2</sub>, -NHR<sub>4</sub> and -NR'R<sub>5</sub> groups in which R<sub>4</sub> and R<sub>5</sub> are, independently of each other, linear or branched, saturated or unsaturated hydrocarbon radicals containing 1 to 6 carbon atoms, with the proviso that the total number of carbon atoms in R<sub>4</sub> + R<sub>5</sub> does not exceed 7, the said R<sub>4</sub> and R<sub>5</sub> optionally being substituted with a halogen atom (iodine, bromine, chlorine or fluorine); a hydroxyl (-OH); sulphonic (-SO<sub>3</sub><sup>-</sup>), sulphate(-SO<sub>4</sub><sup>-</sup>); phosphate (-PO<sub>4</sub>H<sub>2</sub>); primary amine (-NH<sub>2</sub>); secondary amine (-NHR<sub>1</sub>), tertiary amine (-NR<sub>1</sub>R<sub>2</sub>) and/or quaternary amine (-N<sup>+</sup>R<sub>1</sub>R<sub>2</sub>R<sub>3</sub>) group with R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> being, independently of each other, a linear or branched, saturated or unsaturated hydrocarbon radical containing 1 to 6 carbon atoms, with the proviso that the sum of the carbon atoms of R<sub>4</sub> + R<sub>5</sub> + R<sub>1</sub> + R<sub>2</sub> + R<sub>3</sub> does not exceed 7;
  - maleic anhydride;
  - itaconic acid;
  - vinyl alcohol of formula CH<sub>2</sub>=CHOH;
  - vinyl acetate of formula CH<sub>2</sub>=CH-OCOCH<sub>3</sub>;
  - N-vinyl lactams such as N-vinylpyrrolidone, N-vinylcaprolactam and N-butyrolactam;
  - vinyl ethers of formula CH<sub>2</sub>=CHOR in which R<sub>6</sub> is a linear or branched, saturated or unsaturated hydrocarbon radical containing from 1 to 6 carbon atoms;
  - water-soluble styrene derivatives, especially styrene sulphonate;
  - dimethyldiallylammonium chloride; and
  - vinylacetamide.

70. (New) The emulsion as claimed in claim 66, in which the water-soluble units consist totally or partially of one or more of the following components:

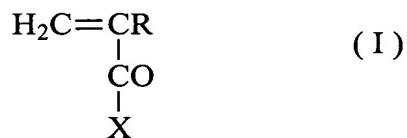
- water-soluble polyurethanes,
- xanthan gum,
- alginates and derivatives thereof such as propylene glycol alginate,
- cellulose derivatives and especially carboxy methylcellulose, hydroxypropylcellulose, hydroxyethylcellulose and quaternized hydroxyethylcellulose,
- galactomannans and derivatives thereof such as konjac gum, guar gum, hydroxypropylguar, hydroxypropylguar modified with sodium methyl carboxylate groups, and hydroxypropyltrimethyl ammonium guar chloride, and
- polyethyleneimine.

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71. (New) The emulsion as claimed in claim 66, in which the water-soluble units have a molar mass ranging from 1000 g/mol to 5 000 000 g/mol when they constitute the water-soluble backbone of a grafted polymer, or a molar mass ranging from 500 g/mol to 100 000 g/mol when they constitute one block of a multiblock polymer or when they constitute the grafts of a grafted polymer.

72. (New) The emulsion as claimed in claim 66, in which the units with an LCST consist of one or more of the following polymers:

- polyethers such as polyethylene oxide (PEO), polypropylene oxide (PPO) and random copolymers of ethylene oxide (EO) and of propylene oxide (PO),
- polyvinyl methyl ethers,
- polymeric N-substituted acrylamide derivatives such as poly-N-isopropylacrylamide, poly-N-ethylacrylamide and copolymers of N-isopropylacrylamide or of N-ethylacrylamide and of a vinyl monomer corresponding to formula (I)



in which:

- R is chosen from H, -CH<sub>3</sub>, -C<sub>2</sub>H<sub>5</sub> or -C<sub>3</sub>H<sub>7</sub>, and

- X is chosen from:

- alkyl oxides of -OR' type in which R' is a linear or branched, saturated or unsaturated hydrocarbon radical containing from 1 to 6 carbon atoms, optionally substituted with at least one halogen atom (iodine, bromine, chlorine or fluorine); a sulphonic (-SO<sub>3</sub><sup>-</sup>), sulphate (-SO<sub>4</sub><sup>-</sup>), phosphate (-PO<sub>4</sub>H<sub>2</sub>); hydroxyl (-OH); primary amine (-NH<sub>2</sub>); secondary amine (-NHR<sub>1</sub>), tertiary amine (-NR<sub>1</sub>R<sub>2</sub>) or quaternary amine (-N<sup>+</sup>R<sub>1</sub>R<sub>2</sub>R<sub>3</sub>) group with R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> being, independently of each other, a linear or branched, saturated or unsaturated hydrocarbon radical containing 1 to 6 carbon atoms, with the proviso that the sum of the carbon atoms of R' + R<sub>1</sub> + R<sub>2</sub> + R<sub>3</sub> does not exceed 7; and

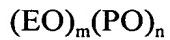
- -NH<sub>2</sub>, -NHR<sub>4</sub> and -NR<sub>4</sub>R<sub>5</sub> groups in which R<sub>4</sub> and R<sub>5</sub> are, independently of each other, linear or branched, saturated or unsaturated hydrocarbon radicals containing 1 to 6 carbon atoms, with the proviso that the total number of carbon atoms in R<sub>4</sub> + R<sub>5</sub> does not exceed 7, the said R<sub>4</sub> and R<sub>5</sub> optionally being substituted with a halogen atom (iodine, bromine, chlorine or fluorine); a hydroxyl (-OH); sulphonic (-SO<sub>3</sub><sup>-</sup>), sulphate (-SO<sub>4</sub><sup>-</sup>); phosphate (-PO<sub>4</sub>H<sub>2</sub>);

primary amine ( $\text{NH}_2$ ); secondary amine (- $\text{NHR}_1$ ), tertiary amine (- $\text{NR}_1\text{R}_2$ ) and/or quaternary amine (- $\text{N}^+\text{R}_1\text{R}_2\text{R}_3$ ) group with  $\text{R}_1$ ,  $\text{R}_2$  and  $\text{R}_3$  being, independently of each other, a linear or branched, saturated or unsaturated hydrocarbon radical containing 1 to 6 carbon atoms, with the proviso that the sum of the carbon atoms of  $\text{R}_4 + \text{R}_5 + \text{R}_1 + \text{R}_2 + \text{R}_3$  does not exceed 7; or of a monomer chosen from maleic anhydride, itaconic acid, vinyl-pyrrolidone, styrene and its derivatives, dimethyldiallylammonium chloride, vinylacetamide, vinyl ethers and vinyl acetate derivatives; and

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- polyvinylcaprolactam and copolymers of vinylcaprolactam and of a vinyl monomer corresponding to formula (I), or of a monomer chosen from maleic anhydride, itaconic acid, vinylpyrrolidone, styrene and its derivatives, dimethyldiallylammonium chloride, vinylacetamide, vinyl ethers and vinylacetate derivatives.

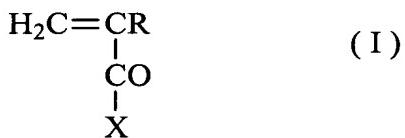
73. (New) The emulsion as claimed in claim 66, in which the units with an LCST consist of polypropylene oxide of formula  $(\text{PPO})_n$  with  $n$  being an integer from 10 to 50, or random copolymers of ethylene oxide (EO) and of propylene oxide (PO), represented by the formula:



in which  $m$  is an integer ranging from 1 to 40 and preferably from 2 to 20, and  $n$  is an integer ranging from 10 to 60 and preferably from 20 to 50.

74. (New) The emulsion as claimed in claim 73 in which the molar mass of the units with an LCST is from 500 to 5300 g/mol and preferably from 1500 to 4000 g/mol.

75. (New) The emulsion as claimed in claim 72, in which the units with an LCST consist of poly-N-isopropyl-acrylamide or poly-N-ethylacrylamide or a copolymer of N-isopropylamide or of N-ethylacrylamide and of a monomer corresponding to formula (I):



in which:

- R is chosen from H, -CH<sub>3</sub>, -C<sub>2</sub>H<sub>5</sub> or -C<sub>3</sub>H<sub>7</sub>, and

- X is chosen from:

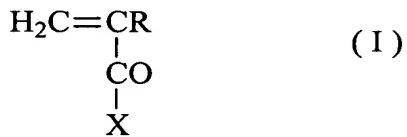
- alkyl oxides of -OR' type in which R' is a linear or branched, saturated or unsaturated hydrocarbon radical containing from 1 to 6 carbon atoms, optionally substituted with at least one halogen atom (iodine, bromine, chlorine or fluorine); a sulphonic (-SO<sub>3</sub><sup>-</sup>), sulphate (-SO<sub>4</sub><sup>-</sup>), phosphate (-PO<sub>4</sub>H<sub>2</sub>); hydroxyl (-OH); primary amine (-NH<sub>2</sub>); secondary amine (-NHR<sub>1</sub>), tertiary amine (-NR<sub>1</sub>R<sub>2</sub>) or quaternary amine (-N<sup>+</sup>R<sub>1</sub>R<sub>2</sub>R<sub>3</sub>) group with R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> being, independently of each other, a linear or branched, saturated or unsaturated hydrocarbon radical containing 1 to 6 carbon atoms, with the proviso that the sum of the carbon atoms of R' + R<sub>1</sub> + R<sub>2</sub> + R<sub>3</sub> does not exceed 7; and

- -NH<sub>2</sub>, -NHR<sub>4</sub> and -NR<sub>4</sub>R<sub>5</sub> groups in which R<sub>4</sub> and R<sub>5</sub> are, independently of each other, linear or branched, saturated or unsaturated hydrocarbon radicals containing 1 to 6 carbon atoms, with the proviso that the total number of carbon atoms in R<sub>4</sub> + R<sub>5</sub> does not exceed 7, the said R<sub>4</sub> and R<sub>5</sub> optionally being substituted with a halogen atom (iodine, bromine, chlorine or fluorine); a hydroxyl (-OH); sulphonic (-SO<sub>3</sub><sup>-</sup>), sulphate (-SO<sub>4</sub><sup>-</sup>); phosphate (-PO<sub>4</sub>H<sub>2</sub>);

primary amine ( $\text{NH}_2$ ); secondary amine ( $-\text{NHR}_1$ ), tertiary amine ( $-\text{NR}_1\text{R}_2$ ) and/or quaternary amine ( $-\text{N}^+\text{R}_1\text{R}_2\text{R}_3$ ) group with  $\text{R}_1$ ,  $\text{R}_2$  and  $\text{R}_3$  being, independently of each other, a linear or branched, saturated or unsaturated hydrocarbon radical containing 1 to 6 carbon atoms, with the proviso that the sum of the carbon atoms of  $\text{R}_4 + \text{R}_5 + \text{R}_1 + \text{R}_2 + \text{R}_3$  does not exceed 7; or of a monomer chosen from maleic anhydride, itaconic acid, vinylpyrrolidone, styrene and its derivatives, dimethyldiallylammonium chloride, vinylacetamide, vinyl alcohol, vinyl acetate, vinyl ethers and vinyl acetate derivatives.

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76. (New) The emulsion as claimed in claim 75, in which the molar mass of the units with an LCST is from 1000 g/mol to 500 000 g/mol and preferably from 2000 to 50 000 g/mol.

77. (New) The emulsion as claimed in claim 66, in which the units with an LCST consist of a polyvinylcaprolactam or a copolymer of vinylcaprolactam of a vinyl monomer corresponding to formula (I)



in which:

- R is chosen from H, -CH<sub>3</sub>, -C<sub>2</sub>H<sub>5</sub> or -C<sub>3</sub>H<sub>7</sub>, and
- X is chosen from:

- alkyl oxides of -OR' type in which R' is a linear or branched, saturated or unsaturated hydrocarbon radical containing from 1 to 6 carbon atoms, optionally substituted with at least one halogen atom (iodine, bromine, chlorine or fluorine); a sulphonic (-SO<sub>3</sub><sup>-</sup>), sulphate (-SO<sub>4</sub><sup>-</sup>), phosphate (-PO<sub>4</sub>H<sub>2</sub>); hydroxyl (-OH); primary amine (-NH<sub>2</sub>); secondary amine (-NHR<sub>1</sub>), tertiary amine (-NR<sub>1</sub>R<sub>2</sub>) or quaternary amine (-N<sup>+</sup>R<sub>1</sub>R<sub>2</sub>R<sub>3</sub>) group with R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> being, independently of each other, a linear or branched, saturated or unsaturated hydrocarbon radical containing 1 to 6 carbon atoms, with the proviso that the sum of the carbon atoms of R' + R<sub>1</sub> + R<sub>2</sub> + R<sub>3</sub> does not exceed 7; and

- -NH<sub>2</sub>, -NHR<sub>4</sub> and -NR<sub>4</sub>R<sub>5</sub> groups in which R<sub>4</sub> and R<sub>5</sub> are, independently of each other, linear or branched, saturated or unsaturated hydrocarbon radicals containing 1 to 6 carbon atoms, with the proviso that the total number of carbon atoms in R<sub>4</sub> + R<sub>5</sub> does not exceed 7, the said R<sub>4</sub> and R<sub>5</sub> optionally being substituted with a halogen atom (iodine, bromine, chlorine or fluorine); a hydroxyl (-OH); sulphonic (-SO<sub>3</sub><sup>-</sup>), sulphate (-SO<sub>4</sub><sup>-</sup>); phosphate (-PO<sub>4</sub>H<sub>2</sub>); primary amine (NH<sub>2</sub>); secondary amine (-NHR<sub>1</sub>), tertiary amine (-NR<sub>1</sub>R<sub>2</sub>) and/or quaternary amine (-N<sup>+</sup>R<sub>1</sub>R<sub>2</sub>R<sub>3</sub>) group with R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> being, independently of each other, a linear or branched, saturated or unsaturated hydrocarbon radical containing 1 to 6 carbon atoms, with the proviso that the sum of the carbon atoms of R<sub>4</sub> + R<sub>5</sub> + R<sub>1</sub> + R<sub>2</sub> + R<sub>3</sub> does not exceed 7;

or of a monomer chosen from maleic anhydride, itaconic acid, vinylpyrrolidone, styrene and its derivatives, dimethyldiallyl ammonium chloride, vinylacetamide, vinyl alcohol, vinyl acetate, vinyl ethers and vinyl acetate derivatives.

78. (New) The emulsion as claimed in claim 77, in which the molar mass of the units with an LCST is from 1000 to 500 000 g/mol and preferably from 2000 to 50 000 g/mol.

79. (New) The emulsion as claimed in claim 66, in which the proportion by mass of the units with an LCST of the polymer is from 5 to 70%, preferably from 20 to 65% and better still from 30 to 60% relative to the polymer.

80. (New) The emulsion as claimed in claim 66, in which the demixing temperature of the units with an LCST is from 5 to 40°C for a concentration of the units with an LCST in water of 1% by mass.

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*Conc*  
81. (New) The emulsion as claimed in claim 66, in which the concentration by mass of polymer in the aqueous phase is less than or equal to 5% and preferably from 0.01% to 50.

82. (New) The emulsion as claimed in claim 66, in which the aqueous phase also comprises an emulsifying surfactant at a concentration not exceeding 1%.

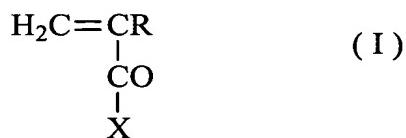
83. (New) The emulsion as claimed in claim 66, also comprising a gelling agent.

84. (New) The emulsion as claimed in claim 67, in which the polymer is in the form of a block polymer comprising water-soluble units alternating with units with an LCST, or in the form of a grafted polymer whose backbone is formed from water soluble units and which bears grafts consisting of units with an LCST, this structure possibly being partially crosslinked, or alternatively in the form of a grafted polymer whose backbone is formed from units with an LCST and which bears grafts consisting of water-soluble units, this structure possibly being partially crosslinked.

85. (New) The emulsion as claimed in claim 67, in which the water-soluble units are obtained by free-radical polymerization of at least one monomer chosen from:

- (meth)acrylic acid;

- vinyl monomers of formula (I) below:



in which:

- R is chosen from H, -CH<sub>3</sub>, -C<sub>2</sub>H<sub>5</sub> or -C<sub>3</sub>H<sub>7</sub>, and

- X is chosen from:

- alkyl oxides of -OR' type in which R' is a linear or branched, saturated or unsaturated hydrocarbon radical containing from 1 to 6 carbon atoms, optionally substituted with at least one halogen atom (iodine, bromine, chlorine or fluorine); a sulphonic (-SO<sub>3</sub><sup>-</sup>), sulphate (-SO<sub>4</sub><sup>2-</sup>), phosphate (-PO<sub>4</sub>H<sub>2</sub>); hydroxyl (-OH); primary amine (-NH<sub>2</sub>); secondary amine (-NHR<sub>1</sub>), tertiary amine (-NR<sub>1</sub>R<sub>2</sub>) or quaternary amine (-N<sup>+</sup>R<sub>1</sub>R<sub>2</sub>R<sub>3</sub>) group with R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> being, independently of each other, a linear or branched, saturated or unsaturated hydrocarbon -radical containing 1 to 6 carbon atoms, with the proviso that the sum of the carbon atoms of R<sub>4</sub> + R<sub>1</sub> + R<sub>2</sub> + R<sub>3</sub> does not exceed 7; and

- -NH<sub>2</sub>, -NHR<sub>4</sub> and -NR'R<sub>5</sub> groups in which R<sub>4</sub> and R<sub>5</sub> are, independently of each other, linear or branched, saturated or unsaturated hydrocarbon radicals containing 1 to 6 carbon atoms, with the proviso that the total number of carbon atoms in R<sub>4</sub> + R<sub>5</sub> does not exceed 7, the said R<sub>4</sub> and R<sub>5</sub> optionally being substituted with a halogen atom (iodine, bromine, chlorine or fluorine); a hydroxyl (-OH); sulphonic (-SO<sub>3</sub><sup>-</sup>), sulphate(-SO<sub>4</sub><sup>2-</sup>); phosphate (-PO<sub>4</sub>H<sub>2</sub>); primary amine (-NH<sub>2</sub>); secondary amine (-NHR<sub>1</sub>), tertiary amine (-NR<sub>1</sub>R<sub>2</sub>) and/or quaternary amine (-N<sup>+</sup>R<sub>1</sub>R<sub>2</sub>R<sub>3</sub>) group with

$R_1, R_2$  and  $R_3$  being, independently of each other, a linear or branched, saturated or unsaturated hydrocarbon radical containing 1 to 6 carbon atoms, with the proviso that the sum of the carbon atoms of  $R_4 + R_5 + R_1 + R_2 + R_3$  does not exceed 7;

- maleic anhydride;
- itaconic acid;
- vinyl alcohol of formula  $CH_2=CHOH$ ;
- vinyl acetate of formula  $CH_2=CH-OCOCH_3$ ;
- N-vinyl lactams such as N-vinylpyrrolidone, N-vinylcaprolactam and N-butyrolactam;
- vinyl ethers of formula  $CH_2=CHOR$  in which  $R_6$  is a linear or branched, saturated or unsaturated hydrocarbon radical containing from 1 to 6 carbon atoms;
- water-soluble styrene derivatives, especially styrene sulphonate;
- dimethyldiallylammonium chloride; and
- vinylacetamide.

86. (New) The emulsion as claimed in claim 74, in which the water-soluble units consist totally or partially of one or more of the following components:

- water-soluble polyurethanes,
- xanthan gum,
- alginates and derivatives thereof such as propylene glycol alginate,
- cellulose derivatives and especially carboxy methylcellulose, hydroxypropylcellulose, hydroxyethylcellulose and quaternized hydroxy ethylcellulose,

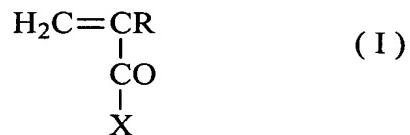
- galactomannans and derivatives thereof such as konjac gum, guar gum, hydroxypropylguar, hydroxypropylguar modified with sodium methyl carboxylate groups, and hydroxypropyltrimethyl ammonium guar chloride, and
- polyethyleneimine.

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87. (New) The emulsion as claimed in claim 67, in which the water-soluble units have a molar mass ranging from 1000 g/mol to 5 000 000 g/mol when they constitute the water-soluble backbone of a grafted polymer, or a molar mass ranging from 500 g/mol to 100 000 g/mol when they constitute one block of a multiblock polymer or when they constitute the grafts of a grafted polymer.

88. (New) The emulsion as claimed in claim 62, in which the units with an LCST consist of one or more of the following polymers:

- polyethers such as polyethylene oxide (PEO), polypropylene oxide (PPO) and random copolymers of ethylene oxide (EO) and of propylene oxide (PO),
- polyvinyl methyl ethers,
- polymeric N-substituted acrylamide derivatives such as poly-N-isopropylacrylamide, poly-N-ethylacrylamide and copolymers of N-isopropylacrylamide or of N-ethylacrylamide and of a vinyl monomer corresponding to formula (I),



in which:

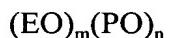
- R is chosen from H, -CH<sub>3</sub>, -C<sub>2</sub>H<sub>5</sub> or -C<sub>3</sub>H<sub>7</sub>, and
- X is chosen from:
  - alkyl oxides of -OR' type in which R' is a linear or branched, saturated or unsaturated hydrocarbon radical containing from 1 to 6 carbon atoms, optionally substituted with at least one halogen atom (iodine, bromine, chlorine or fluorine); a sulphonic (-SO<sub>3</sub><sup>-</sup>), sulphate (-SO<sub>4</sub><sup>-</sup>), phosphate (-PO<sub>4</sub>H<sub>2</sub>); hydroxyl (-OH); primary amine (-NH<sub>2</sub>); secondary amine (-NHR<sub>1</sub>), tertiary amine (-NR<sub>1</sub>R<sub>2</sub>) or quaternary amine (-N<sup>+</sup>R<sub>1</sub>R<sub>2</sub>R<sub>3</sub>) group with R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> being, independently of each other, a linear or branched, saturated or unsaturated hydrocarbon radical containing 1 to 6 carbon atoms, with the proviso that the sum of the carbon atoms of R' + R<sub>1</sub> + R<sub>2</sub> + R<sub>3</sub> does not exceed 7; and
  - -NH<sub>2</sub>, -NHR<sub>4</sub> and -NR<sub>4</sub>R<sub>5</sub> groups in which R<sub>4</sub> and R<sub>5</sub> are, independently of each other, linear or branched, saturated or unsaturated hydrocarbon radicals containing 1 to 6 carbon atoms, with the proviso that the total number of carbon atoms in R<sub>4</sub> + R<sub>5</sub> does not exceed 7, the said R<sub>4</sub> and R<sub>5</sub> optionally being substituted with a halogen atom (iodine, bromine, chlorine or fluorine); a hydroxyl (-OH); sulphonic (-SO<sub>3</sub><sup>-</sup>), sulphate (-SO<sub>4</sub><sup>-</sup>); phosphate (-PO<sub>4</sub>H<sub>2</sub>); primary amine (NH<sub>2</sub>); secondary amine (-NHR<sub>1</sub>), tertiary amine (-NR<sub>1</sub>R<sub>2</sub>) and/or quaternary amine (-N<sup>+</sup>R<sub>1</sub>R<sub>2</sub>R<sub>3</sub>) group with R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> being, independently of each other, a linear or branched, saturated or unsaturated hydrocarbon radical containing 1 to 6 carbon atoms, with the proviso that the sum of the carbon atoms of R<sub>4</sub> + R<sub>5</sub> + R<sub>1</sub> + R<sub>2</sub> + R<sub>3</sub> does not exceed 7;

or of a monomer chosen from maleic anhydride, itaconic acid, vinyl pyrrolidone, styrene and its derivatives, dimethyldiallylammonium chloride, vinylacetamide, vinyl ethers and vinyl acetate derivatives; and

- polyvinylcaprolactam and copolymers of vinylcaprolactam and of a vinyl monomer corresponding to formula (I), or of a monomer chosen from maleic anhydride, itaconic acid, vinylpyrrolidone, styrene and its derivatives, dimethyldiallylammonium chloride, vinylacetamide, vinyl ethers and vinyl acetate derivatives.

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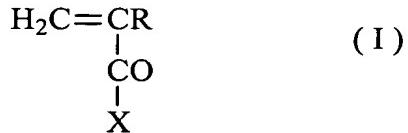
89. (New) The emulsion as claimed in claim 67, in which the units with an LCST consist of polypropylene oxide of formula  $(PPO)_n$  with n being an integer from 10 to 50, or random copolymers of ethylene oxide (EO) and of propylene oxide (PO), represented by the formula:



in which m is an integer ranging from 1 to 40 and preferably from 2 to 20, and n is an integer ranging from 10 to 60 and preferably from 20 to 50.

90. (New) The emulsion as claimed in claim 89, in which the molar mass of the units with an LCST is from 500 to 5300 g/mol and preferably from 1500 to 4000 g/mol.

91. (New) The emulsion as claimed in claim 88, in which the units with an LCST consist of poly-N-isopropyl-acrylamide or poly-N-ethylacrylamide or a copolymer of N-isopropylamide or of N-ethyl-acrylamide and of a monomer corresponding to formula (I):



in which:

- R is chosen from H, -CH<sub>3</sub>, -C<sub>2</sub>H<sub>5</sub> or -C<sub>3</sub>H<sub>7</sub>, and

- X is chosen from:

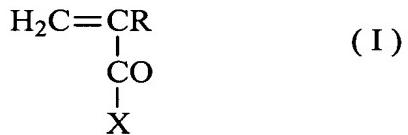
- alkyl oxides of -OR' type in which R' is a linear or branched, saturated or unsaturated hydrocarbon radical containing from 1 to 6 carbon atoms, optionally substituted with at least one halogen atom (iodine, bromine, chlorine or fluorine); a sulphonic (-SO<sub>3</sub><sup>-</sup>), sulphate (-SO<sub>4</sub><sup>-</sup>), phosphate (-PO<sub>4</sub>H<sub>2</sub>); hydroxyl (-OH); primary amine (-NH<sub>2</sub>); secondary amine (-NHR<sub>1</sub>), tertiary amine (-NR<sub>1</sub>R<sub>2</sub>) or quaternary amine (-N<sup>+</sup>R<sub>1</sub>R<sub>2</sub>R<sub>3</sub>) group with R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> being, independently of each other, a linear or branched, saturated or unsaturated hydrocarbon radical containing 1 to 6 carbon atoms, with the proviso that the sum of the carbon atoms of R' + R<sub>1</sub> + R<sub>2</sub> + R<sub>3</sub> does not exceed 7; and

- -NH<sub>2</sub>, -NHR<sub>4</sub> and -NR<sub>4</sub>R<sub>5</sub> groups in which R<sub>4</sub> and R<sub>5</sub> are, independently of each other, linear or branched, saturated or unsaturated hydrocarbon radicals containing 1 to 6 carbon atoms, with the proviso that the total number of carbon atoms in R<sub>4</sub> + R<sub>5</sub> does not exceed 7, the said R<sub>4</sub> and R<sub>5</sub> optionally being substituted with a halogen atom (iodine, bromine, chlorine or fluorine); a hydroxyl (-OH); sulphonic (-SO<sub>3</sub><sup>-</sup>), sulphate (-SO<sub>4</sub><sup>-</sup>); phosphate (-PO<sub>4</sub>H<sub>2</sub>); primary amine (NH<sub>2</sub>); secondary amine (-NHR<sub>1</sub>), tertiary amine (-NR<sub>1</sub>R<sub>2</sub>) and/or quaternary amine (-N<sup>+</sup>R<sub>1</sub>R<sub>2</sub>R<sub>3</sub>) group with R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> being, independently of each other, a linear or branched, saturated or unsaturated

hydrocarbon radical containing 1 to 6 carbon atoms, with the proviso that the sum of the carbon atoms of  $R_4 + R_5 + R_1 + R_2 + R_3$  does not exceed 7; or of a monomer chosen from maleic anhydride, itaconic acid, vinylpyrrolidone, styrene and its derivatives, dimethyldiallylammonium chloride, vinylacetamide, vinyl alcohol, vinyl acetate, vinyl ethers and vinyl acetate derivatives.

92. (New) The emulsion as claimed in claim 91, in which the molar mass of the units with an LCST is from 1000 g/mol to 500 000 g/mol and preferably from 2000 to 50 000 g/mol.

93. (New) The emulsion as claimed in claim 67, in which the units with an LCST consist of a polyvinylcaprolactam or a copolymer of vinylcaprolactam and of vinyl monomer corresponding to formula (I)



in which:

- R is chosen from H, -CH<sub>3</sub>, -C<sub>2</sub>H<sub>5</sub> or -C<sub>3</sub>H<sub>7</sub>, and
- X is chosen from:
  - alkyl oxides of -OR' type in which R' is a linear or branched, saturated or unsaturated hydrocarbon radical containing from 1 to 6 carbon atoms, optionally substituted with at least one halogen atom (iodine, bromine, chlorine or fluorine); a sulphonic (-SO<sub>3</sub><sup>-</sup>), sulphate (-SO<sub>4</sub><sup>2-</sup>), phosphate (-PO<sub>4</sub>H<sub>2</sub>); hydroxyl (-OH); primary amine (-NH<sub>2</sub>); secondary amine (-NHR<sub>1</sub>),

tertiary amine (-NR<sub>1</sub>R<sub>2</sub>) or quaternary amine (-N<sup>+</sup>R<sub>1</sub>R<sub>2</sub>R<sub>3</sub>) group with R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> being, independently of each other, a linear or branched, saturated or unsaturated hydrocarbon radical containing 1 to 6 carbon atoms, with the proviso that the sum of the carbon atoms of R' + R<sub>1</sub> + R<sub>2</sub> + R<sub>3</sub> does not exceed 7; and

- -NH<sub>2</sub>, -NHR<sub>4</sub> and -NR<sub>4</sub>R<sub>5</sub> groups in which R<sub>4</sub> and R<sub>5</sub> are, independently of each other, linear or branched, saturated or unsaturated hydrocarbon radicals containing 1 to 6 carbon atoms, with the proviso that the total number of carbon atoms in R<sub>4</sub> + R<sub>5</sub> does not exceed 7, the said R<sub>4</sub> and R<sub>5</sub> optionally being substituted with a halogen atom (iodine, bromine, chlorine or fluorine); a hydroxyl (-OH); sulphonic (-SO<sub>3</sub><sup>-</sup>), sulphate (-SO<sub>4</sub><sup>-</sup>); phosphate (-PO<sub>4</sub>H<sub>2</sub>); primary amine (NH<sub>2</sub>); secondary amine (-NHR<sub>1</sub>), tertiary amine (-NR<sub>1</sub>R<sub>2</sub>) and/or quaternary amine (-N<sup>+</sup>R<sub>1</sub>R<sub>2</sub>R<sub>3</sub>) group with R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> being, independently of each other, a linear or branched, saturated or unsaturated hydrocarbon radical containing 1 to 6 carbon atoms, with the proviso that the sum of the carbon atoms of R<sub>4</sub> + R<sub>5</sub> + R<sub>1</sub> + R<sub>2</sub> + R<sub>3</sub> does not exceed 7;

or of a monomer chosen from maleic anhydride, itaconic acid, vinylpyrrolidone, styrene and its derivatives, dimethyldiallylammonium chloride, vinylacetamide, vinyl alcohol, vinyl acetate, vinyl ethers and vinyl acetate derivatives.

94. (New) The emulsion as claimed in claim 93, in which the molar mass of the units with an LCST is from 1000 to 500 000 g/mol and preferably from 2000 to 50 000 g/mol.

95. (New) The emulsion as claimed in claim 62, in which the proportion by mass of the units with an LCST of the polymer is from 5 to 700, preferably from 20 to 65% and better still from 30 to 60% relative to the polymer.

96. (New) The emulsion as claimed in claim 67, in which the demixing temperature of the units with an LCST is from 5 to 40°C for a concentration of the units with an LCST in water of 1% by mass.

97. (New) The emulsion as claimed in claim 67, in which the concentration by mass of polymer in the aqueous phase is less than or equal to 5% and preferably from 0.01% to 5%.

98. (New) The emulsion as claimed in claim 67, in which the aqueous phase also comprises an emulsifying surfactant at a concentration not exceeding 1%.

99. (New) The emulsion as claimed in claim 62, also comprising a gelling agent.

100. (New) The cosmetic use of the foaming composition as claimed in claim 50, for cleansing and/or removing make-up from the skin, including the scalp, the nails, the hair, the eyelashes, the eyebrows, the eyes, mucous membranes and semi-mucous membranes, and any other area of body or facial skin.

101. (New) The cosmetic use of a cosmetic emulsion according to claim 66, for treating, caring for, protecting and/or making up facial skin and/or body skin, mucous membranes (lips), the scalp and/or keratin fibres.

102. (New) The cosmetic use of a cosmetic emulsion as claimed in claim 67, for treating, caring for, protecting and/or making up facial skin and/or body skin, mucous membranes (lips), the scalp and/or keratin fibres.

103. (New) The cosmetic process for cleansing and/or removing make-up from the skin, the scalp and/or the hair, characterized in that the foaming composition of claim 50 is applied to the skin, to the scalp and/or to the hair, in the presence of water, and the foam formed and the soiling residues are removed by rinsing with water.